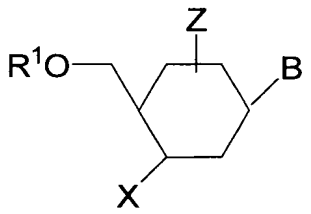
Listing of Claims

1. (Currently Amended): A six membered, at least partially unsaturated, carbocyclic nucleoside compound, including the (-) enantiomer, the (+) enantioner, and pharmaceutically acceptable salts and esters thereof, the compounds represented by ~~the general~~ formula I:



I

wherein:

-Z represents the presence of ~~1 or more~~ one double ~~bonds~~ bond in the six membered carbocylic ring,

-B is a heterocyclic ring selected from the group consisting of pyrimidine and purine bases,

-X is ~~a hydrogen,~~ an azido, F, or OR^2,

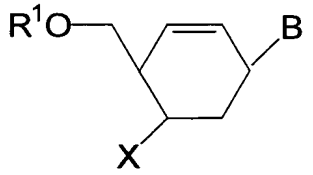
-R^1 and R^2 are the same or different and represent the same or different protecting groups, hydrogen, alkyl, alkenyl, acyl or phosphate moieties wherein;

-the alkyl moiety is a saturated, substituted or unsubstituted straight or branched chains hydrocarbon radical having from 1 to 20, ~~for example~~ 1-16, 1-14, 1-12, 1-10, 1-8, 1-4, carbon atoms,

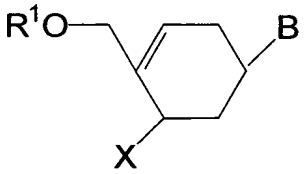
-the alkenyl moiety is an unsaturated congener of the alkyl group and,

-the acyl moiety is an alkanoyl or aroyl moiety, wherein alkanoyl is an alkyl carbonyl radical, wherein alkyl is as described above and aroyl represents benzoyl substituted benzoyl or naphthoyl.

2. (Currently Amended) A six membered, at least partially unsaturated, carbocyclic nucleoside compound, according to claim 1, being a cyclohexenyl nucleoside compound having a ~~general~~ formula selected from the group consisting of II and III:

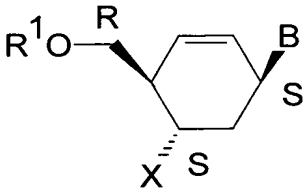


II

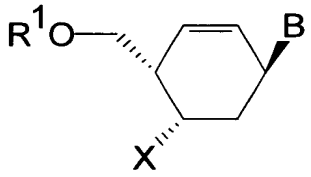


III

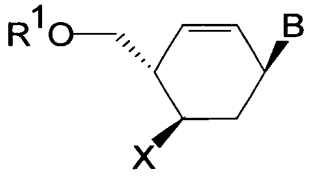
3. (Previously Presented) Compound according to claim 1, selected from the group of compounds consisting of IV, V, VI, VII, VIII, IX, X and X':



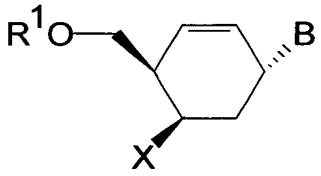
IV



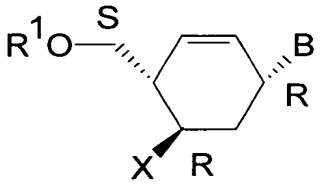
V



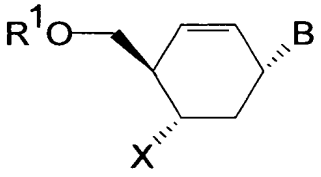
VI



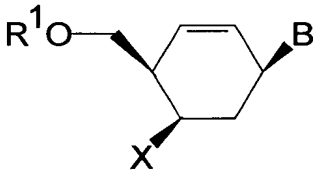
VII



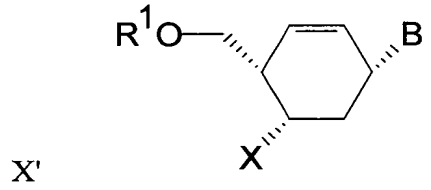
VIII



IX



X



4. (Currently Amended) Compound according to claim 1, wherein the C_1 bearing B ~~substitute~~ substituent and the C_5 bearing X ~~substitute~~substituent both have the (S)-configuration, and the C_4 bearing $-OR^1$ substituent has the (R)-configuration, as depicted by formula IV in claim 3.

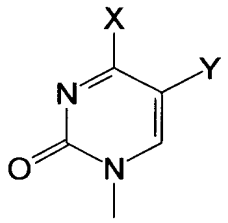
5. (Previously Presented) Compound according to claim 1, wherein the C_1 bearing B substituent and the C_5 bearing X substituent both have the (R)-configuration, and the C_4 bearing $-OR^1$ substituent has the (S)-configuration, as depicted by formula VIII in claim 3.

6. (Previously Presented) Compound according to claim 1, wherein X is represented by a hydroxyl group in the (S)-configuration.

7. (Previously Presented) Compound according to claim 1, wherein X is hydroxyl in the (R)-configuration.

8. (Previously Presented) Compound according to claim 1, wherein B is derived from the group consisting of pyrimidine bases.

9. (Currently Amended) Compound according to claim 7, wherein the pyrimidine base has ~~the general~~ formula XI:



XI

wherein X is chosen from the group consisting of:

- OH, NH_2, and NHQ,

wherein;

- Q is selected from the group consisting of:

  OH and C_{1-5} alkyl, and

- Y is selected from the group consisting of:

  H, F, Cl, Br, I, C_{1-5} alkyl, haloethyl and CH=CH-R, wherein R represents hydrogen, halogen or C_{1-5} alkyl, and wherein haloethyl contains from 1 to 4 F, Cl or Br atoms.

10. (Currently Amended) Compound according to claim 1, wherein B is selected from the group consisting of ~~substituted and unsubstituted adenine,~~ purine bases which are optionally substituted with ~~adenine~~aza, deaza, deoxy or deamino analogues, guanine, 2,6-diaminopurine, hypoxanthine and xanthine.

11. (Previously Presented) Compound according to claim 1, wherein the B is selected from the group consisting of aza, deaza, deoxy and deamino analogues of the heterocyclic rings.

12. (Currently Amended) Compound according to claim 1, wherein the protecting group is selected from the group consisting of a silyl protecting group, a benzyl protecting group, a benzoyl protecting group and a C_6H_5-CH= group.

13. (Previously Presented) Compound according to claim 1, selected from the group consisting of:

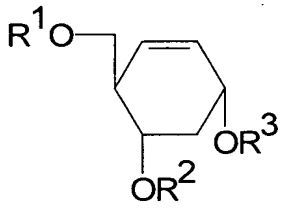
- 9-[1S,4R,5S)-5-hydroxy-4-hydroxymethyl-2-cyclohexenyl] guanine, and
- 9-[1R,4S,5R)-5-hydroxy-4-hydroxymethyl-2-cyclohexenyl].

14. (Previously Presented) Compound according to claim 1 selected from the group consisting of:

- 9-[(1S,4R,5S)-5-(tert-Butyldimethylsilyloxy)-4-(tert-butyldimethylsilyloxymethyl)-2-cyclohexenyl] adenine
- 9-[(1S,4R,5S)-5-Hydroxy-4-hydroxymethyl-2-cyclohexenyl]adenine
- 9-[(1S,4R,5S)-5-(tert-butyldimethylsilyloxy)-4-(tert-butyldimethylsilyloxymethyl)-2-cyclohexenyl]-2-amino-6-chloropurine
- 9-[(1S,4R,5S)-5-hydroxy-4-hydroxymethyl-2-cyclohexenyl]guanine
- 9-[(1R,4S,5R)-5-Benzoyloxy-4-benzoyloxymethyl-2-cyclohexenyl] adenine
- 9-[(1R,4S,5R)-5-hydroxy-4-hydroxymethyl-2-cyclohexenyl] adenine
- 9-[(1R,4S,5R)-5-Benzoyloxy-4-benzoyloxymethyl-2-cyclohexenyl] guanine, and
- 9-[(1R,4S,5R)-5-Hydroxy-4-hydroxymethyl-2-cyclohexenyl] guanine.

15. (Currently Amended) ~~Process for providing~~ A method of producing the compound of claim 1, including, the (-) enantiomer, the (+) enantiomer, and pharmaceutically acceptable salts and esters thereof, ~~said process~~ comprising the steps of:

- ~~providing~~ reacting a cyclohexenyl compound of ~~the general~~ formula XII:



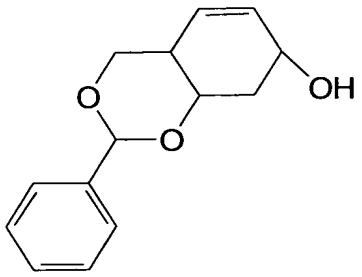
- ~~wherein R^1 and R^2 are protecting groups and R^3 is a leaving group or a Hydrogen atom, followed by the step of substituting~~ wherein R^1 and R^2 is a protecting group or

protecting groups and R^3 is a leaving group or a Hydrogen atom, and wherein the OR^{-3} group of the cyclohexenyl compound is substituted by a pyrimidine or purine base.

16. (Currently Amended): Process according to claim 15 wherein R^3 is hydrogen and wherein a Mitsunobo ~~type~~ reaction is utilised.

17. (Original): Process according to claim 15 wherein R^3 is a leaving group enabling nucleophilic substitution.

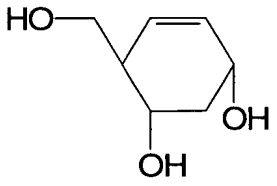
18. (Currently Amended) Process according to claim 15, wherein the compound of ~~general~~ formula XII has the chemical formula XIII;



XIII

including analogues thereof either in a racemate form or separated isomers thereof.

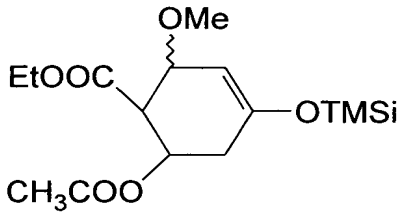
19. (Currently Amended) Process according to claim ~~15~~ 18, wherein compound XIII is provided by reacting (±) 4-hydroxymethyl-cyclohex-2-en-1,5 Diol of formula XIV;



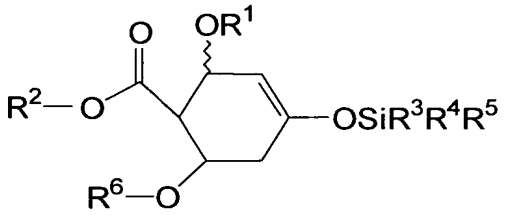
XIV

with a benzaldehyde analogue and a Lewis acid.

20. (Currently Amended) Process according to claim 15, wherein compound XIV is provided by the reduction of compound selected from the group consisting of XVA and XVB;



XVA



XVB

wherein for ~~SVB~~XVB:

- R^1 and R^2 are alkyl or alkenyl moieties,

wherein:

- R^1 and R^2 are the same or different, and
- alkyl is a saturated, substituted or unsubstituted hydrocarbon radical having from 1 to 20, carbon atoms and being straight or branched chain, and
- alkenyl is the unsaturated congener of the alkyl group, and
- R^3, R^4 and R^5 are alkyl, alkenyl or aryl moieties, wherein:
- R^3, R^4 and R^5 are the same or different, and
- alkyl is a saturated, substituted or unsubstituted straight or branched chain hydrocarbon radical having from 1 to 20 carbon atoms and
- alkenyl is the unsaturated congener of the alkyl group, and
- aryl represents phenyl or substituted phenyl, and

R^6 is an alkyl, alkenyl or acyl moiety, wherein

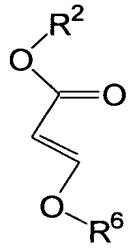
- alkyl is a saturated, substituted or unsubstituted hydrocarbon straight or branched chain radical having from 1 to 20 carbon atoms,
- alkenyl is the unsaturated congener of the alkyl group, and

- acyl is an alkanoyl or aroyl moiety, wherein alkanoyl is an alkyl carbonyl radical, wherein alkyl is as described above and aroyl represents benzoyl, substituted benzoyl or naphthoyl.

21. (Previously Presented) Process according to claim 20, wherein compound XVA or XVB is provided by a Diels-Alder reaction, by the cyclo addition of a suitable diene and dienophile.

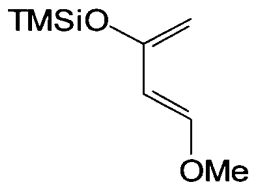
22. (Original) Process according to claim 21 wherein the diene has the following chemical structure XVI, and the dienophile has the following chemical structure XVII, wherein R^1, R^2, R^3, R^4, R^5 and $R^6$are as defined in claim 20;

XVI

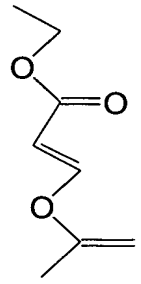


XVII

23. (Original) Process according to claim 22 wherein the diene has the chemical structure XVI' and the dieneophile has the chemical structure XVIII;

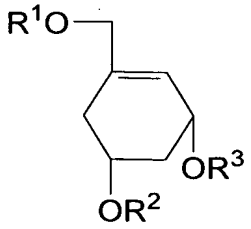


XVI'

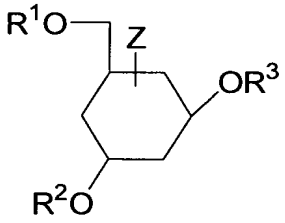


XVIII

24. (Currently Amended) A six membered, at least partially unsaturated, carbocyclic nucleoside compound, including the (-) enantiomer, the (+) enantiomer, and pharmaceutically acceptable salts and esters thereof, the compounds represented by a ~~general~~ formula selected from the group consisting of XII and XIX;



XII



XIX

wherein:

- Z represents the presence of ~~1 or more~~ one double ~~bonds~~ bond in the carbocyclic ring,
- R^1 and R^2 are protecting groups and R^3 is a leaving group or a Hydrogen atom.

25. (Previously Presented) Compound according to claim 24, wherein:

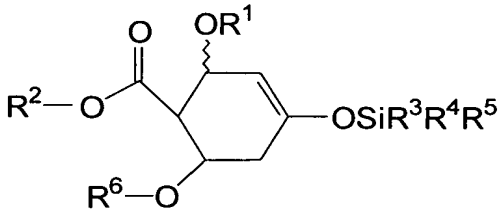
R^1 and R^2 are the same or different and hydrogen, alkyl, alkenyl, acyl or phosphate moieties are represented, or R^1 and R^2 represent a cyclic protecting group, wherein:

- alkyl is a saturated, substituted or unsubstituted straight or branched chain hydrocarbon radical having from 1 to 20 carbon atoms, and
- alkenyl is the unsaturated congener of the alkyl group, and
- acyl is an alkanoyl or aroyl moiety, wherein alkanoyl is an alkyl carbonyl radical, wherein alkyl is as described above and aroyl represents benzoyl, substituted benzoyl or naphthoyl; and

R^3 represents a hydrogen, an alkylsulfonyl or an arylsulfonyl moiety, wherein:

- alkyl is a saturated, substituted or unsubstituted hydrocarbon radical having from 1 to 6 carbon atoms and straight or branched chain, and
- aryl represents phenyl or substituted phenyl.

26. (Currently Amended) A cyclohexenyl compound, including the (-) enantiomer, the (+) enantiomer, and pharmaceutically acceptable salts and esters thereof, the compound represented by ~~the general~~ formula XVB;



XVB

wherein R^1 and R^2 are alkyl or alkenyl moieties, wherein

- R^1 and R^2 are the same or different, and

- alkyl is a saturated, substituted or unsubstituted straight or branched chain hydrocarbon radical having from 1 to 20 carbon atoms,
- alkenyl is the unsaturated congener of the alkyl group, and

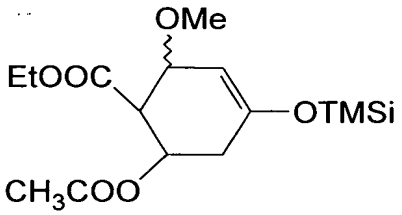
R^3, R^4 and R^5 are alkyl, alkenyl or aryl moieties, wherein:

- R^3, R^4 and R^5 are the same or different, and
- alkyl is a saturated, substituted or unsubstituted straight or branched chain hydrocarbon radical having from 1 to 20 carbon atoms and,
- alkenyl is the unsaturated congener of the alkyl group, and
- aryl represents phenyl or substituted phenyl, and

R^6 is an alkyl, alkenyl or acyl moiety, wherein:

- alkyl is a saturated, substituted or unsubstituted straight or branched chain hydrocarbon radical having from 1 to 20 carbon atoms, and
- alkenyl is the unsaturated congener of the alkyl group, and
- acyl is an alkanoyl or aroyl moiety, wherein alkanoyl is an alkyl carbonyl radical, wherein alkyl is as described above and aroyl represents benzoyl, substituted benzoyl or naphthoyl.

27. (Original) Compound according to claim 26 having the formula XVA being; 5-O-acetyl-4-ethoxycarbonyl-3-O-methyl-1-O-trimethylsilyl-cyclohexen-1,3,5-triol and its isomers;



XVA

28. (Original) (±) 4-hydroxymethyl-cyclohex-2-en-1,5-diol.

29. (Original) (1R, 4R, 5S)-4-hydroxymethyl-cyclohex-2-en-1,5-diol.

30. (Original) (1S, 4S, 5R)-4-hydroxymethyl-cyclohex-2-en-1,5-diol.

31. (Original) (±) 5,7-O-benzylidene-4-hydroxymethyl-cyclohex-2-en-1,5-diol.

32. (Original) (1R, 4R, 5S)-5,7-O-benzylidene-4-hydroxymethyl-cyclohex-2-en-1,5-diol.

33. (Original) (1S, 4S, 5R) 5,7-O-benzylidene-4-hydroxymethyl-cyclohex-2-en-1,5-diol.

34. (Previously Presented) Compound according to claim 24 selected from the group consisting of:

- (4S,5R)-5-Benzoyloxy-4-benzoyloxymethyl-cyclohex-2-en-1-one,
- (1S,4S,5R)-5-Benzoyloxy-4-benzoyloxymethyl-cyclohex-2-en-1-ol,
- (4R,5S)-4-tert-Butyldimethylsilyloxymethyl-5-tert-butyldimethylsilyloxy-cyclohex-2-en-1-one, and
- (1R,4R,5S)-5-(tert-Butyldimethylsilyloxy)-4-(tert-butyldimethylsilyloxymethyl)-cyclohex-2-en-1-ol.

35. (Previously Presented) Compound obtained by the process of claim 15.

36. (Currently Amended) Pharmaceutical composition comprising a compound and a carrier according to claim 1.

37. (Previously Presented) A pharmaceutical composition as claimed in claim 1, having antiviral activity towards herpetic viruses.

38. (Original) A pharmaceutical composition as claimed in claim 37 comprising said active ingredient in a concentration ranging from about 0.1-100 % by weight.

39. (Original) A pharmaceutical composition as claimed in claim 38, having a form which is selected from the group consisting of powders, suspensions, solutions, sprays, emulsions, unguents and creams.

40. (Canceled).

41. (Currently Amended) A method of providing antiviral biological activity against herpes viruses, pox viruses and related viruses, comprising administering the compound according to claim 1.

42. (Canceled).

43. (Currently Amended) A method for the preparation of a pharmaceutical composition having antiviral activity against herpes viruses, pox viruses and related viruses, comprising combining the compound according to claim 1 with other ingredients.

44. (Previously Presented) The method of claim 41, wherein the biological activity comprises pharmaceutical activity.

45. (Canceled)